Notebook Series -- Notebooks by Edison and Other Experimenters
Recorder and Recording Experiments -- A. M. Kennedy Books
Notebook, N-15-03-17

This notebook is a continuation of N-14-09-21. It was used by Absalom M. Kennedy during March-June 1915 as a daily record of experiments and tests with phonograph recorders and reproducers. The daily record is continued in N-15-06-04.2. The tests involve various instruments and parts of the recording machines and variations in the positions of voices, instruments, and recording horns. Also included are tests of machines to reproduce cylinder records from disc master recordings. The entries also describe other work by Kennedy, including his collaboration with Leonard W. McChesney and other employees in the production of "The Birth of the Telephone," a kinetophone film about Alexander Graham Bell. Kennedy's notes often mention Edison's own involvement in the phonograph experiments, including his comments, suggestions, and further instructions about particular recordings or masters. Other individuals involved in the work include Clarence B. Hayes, Walter H. Miller, John F. Ott, and an experimenter named Taylor (probably Henry A. Taylor). The front cover is labeled "Recording Experiments Book #2 from March 17-1915 to June 4, 1915" in ink and "Kennedy" in pencil. The pages are unnumbered. Approximately 150 pages have been used.

8/17/15

① #40 Louder than #74 - sharper and not so full, sweet and natural. Blasts or rattles — sounds pinched. Stands out of horn fine.

② #39 - Not as loud as #74 - Sharper - back in horn - quality fair - heads well.

8/17/15.

① Made up #40 - same as 8/10/15 - book 1 but with aluminum disc waxed to open side of head portion being cut away to allow sapphire arm to project through.

② Hammered out new cap for #39 to allow larger space between diaphragm & cap.

Made up #43 recorder as per next page as an example of small diaphragm. This will test extreme smallness of diaphragm.

Learned from #43 that the method of fastening the arm makes a wonderful difference with a recorder. When the arm was fastened to the ring was too weak - when bent down & waxed to diaphragm was too loud.

#43 - ① Sweet quality but much too weak. Evidently weaving such a short arm has a damping action on vibration.

② - First trial - so sensitive impossible to get away from surface - Bowed chatter badly.
Second trial tightened up. Very loud - blasty. Louder than regular piano. Thin & sharp. - Rattles but musical rattle.

③ Weaker than 2. Thin & sharp - rattles.

3/17/15.

#43 - Brass Head 1¼ Ext. - ¾" int diameter with triangular section rubber gaskets to stretch.
Diaphragm of acetyl cellulose & camphor .00075".

① Regular arm & sapphire arm waxed to clamping ring.

② Arm bent down & waxed to diaphragm.

③ 5/8" x .006" aluminum disc on diaphragm.

8/7/14.

Tested out the following recorders, Hayes singing "Stabat Mater" – Miss Imgrud accompanying on piano –

Cylinder I

#74 - Standard.

#37 - Louder than standard. Trifle sharper - Records well - Sounds good.

Cylinder II

#74 - Standard

#41 - Sharp - Squeaks - Louder than standard - Stands out.

Cylinder III

#38 - Very sharp & squeaky Louder than standard Piano sharp and Piercing.

#42 - Big - Loud - Full - Muffled Blasts - Does not hold - Piano blasts badly - Shows interference between piano and voice.

Cylinder IV

#40 - Loud - Thin - Holds well - Pinched - (Should be tried for sensitiveness & manipulated)

#39 - Back in horn - Little sharp - Louder than #41 Holds well.

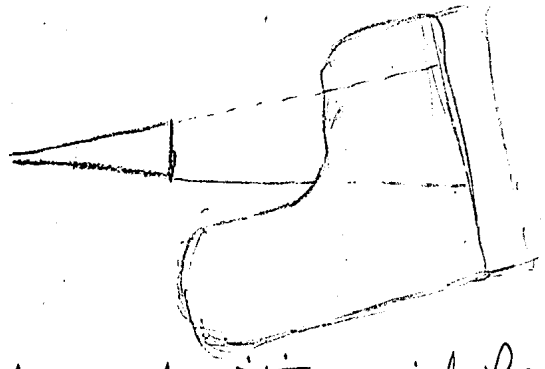
3/18/15 -

Inspected Powell's work on Scenery for Bell Picture.

Worked on recorder #43 - This little recorder gets me. Punctured diaphragm last night so put on a new one this morning. Put regular sapphire shot on with arm cut off. Braced from front by 2 threads to prevent arm working fore & aft with chain. Such a mount has very little resistance to vibration yet this recorder is very low, not at all like when mounted with bent arm to diaphragm last nights.

Experimented with mics. Inquired to find best position for piano to make record. Tried various positions with various changes of horn position and at her suggestion found

C91



above position with horn in horizontal line slightly above middle tones of piano (so as not to include heavier bass strings) and is vertically above focus with the strings.

The difference in positions was very marked. In the former position there was a great deal of interference & rumbling of notes and the work was not clean cut. In the new position the balance was very much better and the notes stood out clear & clean.

3/19/20

Inspected Panels work for Talking Picture - Saw McCheney on same -

Recording machine still going bad. Difficult to locate trouble causing drunken thread.

Trials of following recorders Miss Ampuld at Piano - "Prologue to Pagliacci" -

#74 - Standard.

#37 - Weaker than standard. Does not ring as long - muffled - Back in horn -

#42 - Louder than standard - sharper - Holds better - Not as full - Does not hold ring as long

#39 - Weak - no volume - Plunky - does not ring.

#41 - Thinner than standard Holds better - Not as loud Does not ring especially on high notes.

① Weak. Too weak to judge. Apparently thin Splumpy.

#36 - Loud - Sharp though not as thin as #1. Does not hold as well as #1 though about as well as #74

#40 - Thin - Loud - Sharp - Holds line - Stands out & differentiates well, especially on high notes.

#38 - Louder than Standard. Stands out well - Does not hold - Thinner than Standard.

8/20/15 -

#43 -
Brass head - 1 7/8" external - 3/4" internal diameters. Triangular section rubber gaskets to stretch. Diaphragm acetyl Cellulose & camphor .00075" thick.
① Set up with 3/8" high dome & arm support from front

Set up #43 with arm supporter from front. Showed very weak.
Set up #40 with similar front supporter, arm link thick disc & foot. This showed up also weak.
Set up #40 with regular arm & disc. Still weak.

Marked on Recording machine which was bad.

Marked on cap for disc reproducer —
1st 3 discs & enclose regular diaphragm, these discs having different size holes in center. That having the smallest hole made the reproduction weaker & fuller than standard. Those having larger holes affected the reproduction less as the size of the holes increased.

8/22/15.

To Newark to get furniture for Talking Picture. Two trips required most of the day. Went also after Automobile Licence.

Looked after Camera, preparing ela of Talking Picture.

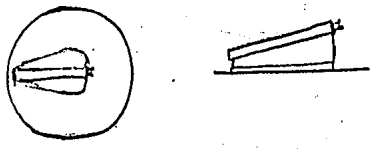
Nights. Built up #48 receiver with new needle arm. This receiver is too sensitive should on even low (not loud) piano notes, particularly in the middle register. Do not respond to the upper registers.

8/28/15 -

Came to Studio & saw to setting up furniture etc. for G.T.&T. Picture.

Started off salesmen's class. These men are not interested in this work and it is going to be hard to get them into it.

Night. Set up #43 with new arm



arranged to support the sapphire and not touch ring to damp action.

This is much too sensitive and chatters or sings when record is revolved.

When waxed even just a touch at bottom to ring becomes very (too) low in quantity = not loud enough.

#43 - 1st trial Needle too flat & back of arm not secure. Needle chattered badly.

2d Trial - arm bent so as to give better angle to needle & back of arm made more secure. Reed stands out fine but quality is peculiar - makes piano sound like a zither.

#44 - ① Whistles so badly that it can not be used.
- ② Not as loud as 74 - Does not ring as well - Blasts on middle Register notes.
③ Fine - apparently as loud, practically as full - holds as well & compares favorably with 74.

3/24/15.

#43 - Brass Head 1 1/4" External - 3/4" internal diameters, triangular section rubber gaskets. Diaphragm of cellulose acetate from solution 2 part $CHCl_3$ - 1 part $C_2H_2Cl_4$ .002" Set up with regular arm bent down to meet diaphragm.

#44 - New. - Diaphragm stretched over metal edge. 1 1/4" diam. Diaphragm of cellulose acetate from solution of 2 parts $CHCl_3$ - 1 part $C_2H_2Cl_4$ .002" thick.
Set up
① Regular arm, lightly fastened to diaphragm at edge.
② More firmly fastened at edge and on diaphragm.
③ 7/8" x .006" disc put on & remounted.

9/24/15.
Looked after Gilson & photography of talking picture.
Built up preamps 24 & 25
& tested preliminary on 25.

8/3-5/15.

Started #44 over. Rough cut at first. Turned sapphire & reset arm - Seems good compares favorably with #74. Tried out again with Miss Sampud. Recorder seems to hold better than #74 - stands out of horn better - is about as loud - quality fairly near the same. Need for further test.

At studio to get set up for picture. Gibson jumps around with camera too much and does not attend to the larger things as lighting.

Night made up & tested out recorder #45. So thinner & sharper than standard with regular set up and with 1/2" x .006" aluminum disc.

#15 - Tested 8/25/15

① Loud, Lerm, differentiates well - blends out of room. too thin & sharp.

② But little change from above except head is no thinner & more pinched

③ Try smaller dome in place of disc.

8/25/15

#15 - Brass Head - Knife edge design - 3/4" diameter. Diaphragm of acetyl cellulose (film) solution in $CHCl_3$ = 1 pt $C_2H_2Cl_4$ = .002"

① Set up with regular arm & flange foot & regular sapphire

② Set up with 1/2" x .006" aluminum disc - regular arm, foot & sapphire.

2/26/15.

Morning - with Diamond
Miss Dillerman -

Afternoon - Recorded Miss
Lackie - 2 songs - 5 records.

Marked out recording "Stabat
Mater" composed by Romano
Recorded Quartette from
Rigoletto. Used Balance
of Used # 1 & 2 recorder

Tested out #44 against
#74 recorders with Miss
Yale's voice. #44 shows
up excellently. Stands
out better than #74 - is
as loud & practically as
full. Cuts & rung on notes
a little sooner. Made
all Quartette records
with it. They were good.

2/27/15-

Checked up Scenery set up etc for Bell Telephone Picture.
Marked on Reader #46-5" diameter.
Afternoon - take Bell Telephone Picture.

Sept 15.
Went to Newark to leave Keys car, take examination for drivers license and bus back to Boise in morning.

Instructing Diamond Dye salesmen in afternoon.

#45 ① - 3/31/15

Weak, sharp - stands out well - makes piano sound like a zither.

3/30/15 -
Instructing Diamond-Dean Salesman all morning.

Examination afternoon.

#45 - Brass head - knife edge pattern, 3/4" diameter.
Diaphragm of acetyl cellulose from solution 2 parts $CHCl_3$ #1 part $C_2H_2Cl_4$.

① Aluminum Disc 1/2" x .006" waxed to center of diaphragm.
Sapphire regular .038" x .125"
Arm regular, waxed to center of disc & to edge of diaphragm

#46 ① 3/30/15.

① Piano louder than #-41 Very loud - Hollo wood but sounds like Zither.

② Very loud but has a barrelly or horn tone.

③ Becomes very full - Zither like tone all gone - but barrelly - loudness much diminished -

3/30/15

#46 - Brass head - Knife Edge design - 5/8" diameter. Diaphragm of acetyl cellulose from solution in 9 parts $CHCl_3$ + 1 part C_2H_5OH - .002" thick

① Set up with regular arm, fairly large post - large dead wax in center, waxed to edge of diaphragm. Regular .038" x .125" Sapphire.

② Needle cocked more than above.

③ Loaded with small piece of solder.

8/31/15

Built up #47.
Tested out #45 - 46 - 47 against 44.
#45 - Weak - Sharp - Stands out well
Makes piano sound like
a zither.
#46 - Loud - Less sharp than 45 -
Stands out - zither sound.
#47 - Not as loud as 46 but
louder than 44. Stands out
well. Sharper than 46.
Tone somewhat zither like.
#44 - Good
Took some of the wear flattening
end of #45 arm to diaphragm
away to make more free.
Added to #47 disc 3/4 x 006"
soft aluminum.
Cocked model of #46 more to
give sharper cut.
Afternoon - Quantity. New
Bassatone to train in new
arrangement with horns
Test of these
#44 - Very good
#45 - Weak - sharp. Thin zither like
#46 - Very loud - blasty horn sound

Made over 4/27/15

#47 ① 4/1/15 Louder than 46 (Standard but not as loud as 46) Stands out well. Sharp & Thin - Guitar somewhat. Zither like tone to piano.

② Holds well, little weak sharp - thin. Slightly zither like tone. Not loud.

#48 - ① Not feed enough. Back in horn. Quite thin Not good as #44

Made over 4/27/15

3/31/15

#47 - Brass Head, knife edge pattern, 1" diameter.
Diaphragm of acetyl cellulose from solution 3 parts $CHCl_3$ + 1 part C_2H_5OH - .002".

① Regular arm & sapphire

② Put disc of aluminum on center 3/4" x .006".

#48 - Brass Head, knife edge design 1 7/8" diameter.
Diaphragm of acetyl cellulose from solution 1 part C_2H_5OH 3 parts $CHCl_3$ - .002"

① Regular arm & sapphire. Aluminum Disc Center .075" x 7/8".

4/1/15
Made up list of parts to take.
Made up #19 pendu.
Loaded #16 with extra weight of lead to make more full.

4/2/15 Tested

#44 - As loud as #74 - Stands out better - does not ring so much that is appears to be damped to a greater extent. Needs more

#48 - Not quite as loud as #74 or #44 - Does not ring as much as 74. Needs better than #44 is a little softer & sweeter.

#49 - Little more sensative than #44 or 48 so that it has a fringe of blast tone quite smallow.

THE DIFFERENCE BETWEEN THESE THREE IS VERY SLIGHT.

4/2/15

Tested recorders as on other side.

Had made 2 recording horns. as follows -

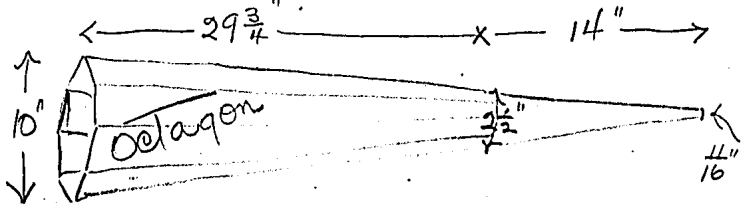
#1

Length $43\frac{3}{4}$"

Material, sheet zinc .010" thick, lapped & soldered joints.

Width of mouth 10" - of end $\frac{11}{16}$"

Larger end Octagon - smaller, round



(1) Standard - Clear, clean

(2) Little louder than (1) - fuller inclined to blast at one point

(3) Little louder than (1) - fuller - practically as loud as (2) but no tendency to blast. SEEMS THAT WALLS OF HORN MUST VIABRATE -

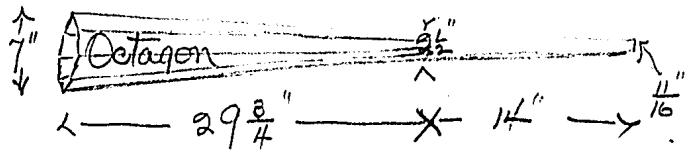
#2

Length $43\frac{3}{4}$"

Material, sheet zinc .010"

Diameter mouth 7", end $\frac{11}{16}$"

Larger portion octagon, smaller, round.



TEST OF HORNS -

(1) #44 Recorder with #7 horn 54" from floor - 57" from music rack of piano.

(2) #44 Recorder with new #1 horn, 54" from floor, piano not moved so 45" from music rack of piano

(3) #44 Recorder with new #1 horn, 54" from floor, piano moved to 57" from horn.

(4) Horn #2 - Gives more distant and sharp effect to voice, and to piano than #1. Differentiates better and does not blast or interfere.

Experimented with #46 recorder on loading. First heavy load, was too full. Gradually decreased load and it became sharper. Tone was not perfect but proved that the fullness is increased by the load & sharpness by the spring.

#35 - Clear, bright, stands out well, triple sharp & has zither like tone.

#44 - Practically as loud as #35 - fuller - definition as good but fullness makes it apparently not stand out as well. Bass notes sound more full and natural. Whole piano reproduction more natural.

#48 - Very like #44. Almost impossible to detect difference.

#47 - Louder & sharper than any of the above. Gives piano a pronounced zither like quality.

4/26/15.

Taylor put on.
Got castings for heads.

Found Reader #35 from Recording Dept by Mr. Walter Miller.

Tested out Readers #'s 35-44-48-47 as per opposite page

Made over #47 with 7/8" x .006" aluminum disc on center. Otherwise same as before. - Change consisted in increase of size of disc by 1/8".
Effect - not so loud - Sharp - not loud enough for commercial work.
Made over #47 with 5/8 x .006" aluminum disc on center. Otherwise as before.
Louder than above & sharper - too sharp for commercial work.

#47 -

① - Sharp - brings out treble notes but holds back the bass. Loud - firm - holds well -.

② Less sharp - Fuller.

③ Still more full. Quality fair - bass begins to show out.

④ Still more full, not so loud - back in horn

Mechanical Stylus

4/27/15.

#47 - Brass Head - Knife Edge Pattern. 1" diameter. Diaphragm of nitro cellulose

① 5/8" x .006" aluminum disc, regular arm & sapphire

② Loaded with small weight

③ Loaded with heavier weight.

④ Loaded with still heavier wgt.

Mechanical Stylus

With Miss Smgrud - tested reader #44 against #35. Hayes, Miss S., Haspin & K separately agreed that #44 gave more natural piano reproduction.

#47- Loud - Stands out fine. - Sharp - Shows hammer stroke of piano.

4/28/15

Put new disc, aluminum 3/4" x .007" on #47 pearsder & tested out. Result opposite.

With horn #7 tested out the following pearsders.

#35 - (Studio Standard)

#47- Louder - Stands out better - Sharper shows hammer stroke of the piano.

#44- Loud as #35 - Little fuller - Sounds fine - Little more guess than #35 Does not show hammer blow as much.

#74 - (Werner's Standard) - Loud as #35 - Trifle fuller - Sounds a little better.

Tried same out with long horn #1. The effect of this horn as compared with #7 is to diminish the percussive effect of the piano hammer & smooth

The records out.
On this test –
#35 - (Studio Standard)

#74 (Geo-Nerno's Standard) - Same loudness. Little more full. Stacks trifle better.

#44 - trifle louder than 35. Stands out better - little fuller - bass notes show up better.

#47 - Louder - Sharper - Shows hammer strike

Flattened needle arm on #48. Makes good piano record, better than #35 and stands out better than #44,

Dropped needle on #48 still further

On test against #44 is about same in loudness but is a trifle sharper & a little more distinct but shows hammer blows worse

Night = Tested #44 recorder against #35 for blast and for recording at a distance.
#44 blasted more than #35 and was not as loud at 6'-12' & 15'.
Compared #47 (1") recorder with these. This recorder blasts as had an loud voice close up but is noticeably louder at 6'-12' & 15' than #35.
Tested #46 recorder (5/8") under same conditions. Very sharp and unnatural. about as loud as #47 at 6'-12' & 15'.
Tested #45 recorder (3/4") under same conditions. Sharp & unnatural. Very slight blast loud & close up. About as loud as #47 at 6'-12' & 15'
Tested #43 recorder (3/4") under same conditions. Sharp & unnat-ural. Blasts close up. About as loud as #47 at 6'-12' & 15'.
Recorders 46-45-43 are louder than the larger recorders at close range.

4/29/15.

Built #48 over with dome 7/8" .004" aluminum on center. Sharper & clearer than before but seems to intensify some notes - not as even as with disc.

Built up #50 new head made by Taylor.

Tested out #35 - 50 - 44 - 48 (in order) with Miss Ingrid playing Prologue from Pagliacci very loud. Used #7 horn - 54" from floor - 48" from rest on piano.

#35 Standard. - blasts slightly - rings
#50 - Blasts badly - somewhat muffled not as clear & distinct as standard
#44 - Some blasts. Very full & sweet.
#48 (as above) Holds level. Natural quality - little muffled.

It is evident ~~that the~~ reeder must be selected for the horn & player. Heretofore when playing

(65)

myself - (sustained notes - soft touch) always picked #41 reader with #9 long horn as best. Yesterday got rid of Mr. Edison playing (heavy staccato blows, no pedal) with same combination. Was not good. With Mrs. Imgard playing Pagliacci (very loud & marked), #41 blasted and did not show up well.

In response to note by Mr. Edison to make regular recorder with cutter arm at right angles to usual, made up regular reader with regular arm and tested out. Showed up pretty well. Then took off arm & built shorter arm as outlined by Mr. E.

4/20/15.

Found trouble in Mr E's right angled arm recorder of yesterday & changed the arm to remedy.

Made test with this and contrary to expectation it did not chatter but made a very good record.

Will try further, supporting the arm better.

Made up #2 recorder of same sort. The surface of this is excellent - one of the best I ever heard.

Night

Made records with recorder #44, piano played hard - staccato. These beaten frequently.

Tightened up on diaphragm. This diminished the tendency to beat and made records quite sharper and better.

Noticed that some notes pan

together also. Tried changing horn from #7 to #4 - small mouth short horn. Reeds were improved. Took down reeder #44 & substituted for

5/1/15.

Made up another recorder with arm at right angles to regular position

Tested out this and previous recorder first with right angled arm and then replacing this with the standard arm. In both cases there was a little less surface with the regular arm than with the right angled one.

#50 ① Blasts hoarsely, somewhat muffled, not as clear and distinct as standard.

Burt Brown 5/8/15.

#50 – Brass head, knife edge pattern, 1¼" diameter. Diaphragm of acetyl cellulose from solution 1 part $C_2H_2Cl_4$ + 2 parts $CHCl_3$. .002" Regular sapphire & arm ① Disc 7/8" × .006" in center.

Burt Brown 5/8/15.

#57

Made over 5/5/3

① - Even, true nice quality. Triple back in horn. Well, But having raspy places on loud chords.

② Not loud as ① - Further back in horn. Same rattle w rasp on low-low chords.

③ Better than ① & ② but still has some blasts - does not head as well as #35. Good full tone as loud as #35 but does not stand out of horn as well.

#51 - Brass head - Knife edge Pattern - 14" diameter. (domed top) Diaphragm of acetyl cellulose .002" - from solution 1 part $C_2H_2Cl_4$ + 2 parts $CHCl_3$.

Made over 5/5/3

① $\frac{15}{16}$" x .006" spun aluminum dome. Steel arm no foot. Reg. sapphire - Arm very flat.

② Same as ① but arm raised a trifle.

③ Aluminum arm with regular foot - regular sapphire.

5/8/15

Made up & tested out #51 pearlw against #35.

Changed sapphire arm several times in attempt to get away from a peculiar chipping sound the pearlw had. Was unable to remove it entirely.

Started building up pearlw #59 - did not finish

5/4/15.

Finished up recording #57 and tested out as follows -
Using horn #6 -
Piano - ordinary (Nocturne Eb)
Very full & natural - bass o.k. little back in horn but makes piano sound more natural than any recorder I ever heard.
Voice CMK speaking. Much more natural & fully as loud as #35.
Piano - loud & lot of low chords (Grunhausen March). Bass on attack but very natural quality.
Voice - Hayes singing (just a song at Twilight)
Natural - mellow - true. #35 stands out better, is more brilliant but not so natural.

Runs #50 over in attempt to get #57 quality but one that wont hold better.

[01]

#52
(1) - Very full - natural - mellow. In contrast with #85 does not stand out (sounds buried) Blasts on strong low piano chords. Is good and loud.

5/L/N

#52 - Brass head - knife edge pattern - 1¼" diameter.
Diaphragm of cellulose acetate .002" from solution 1 part $O_2H_2Cl_4$ + 2 parts $CHCl_3$.
(1) Dome, spun aluminum 15/16" × .006" on center. Regular arm & sapphire.

#47 -

① Tested against #35 shows up louder, fuller & more natural. Surface good

① On further test this reader "whistled" so badly that it had to be torn down.

② Sharper & louder than #35 Shows percussive effect of piano hammers. Needs wind.

5/4/15

#47 - Brass Head. Knife edge Pattern 1" Diameter.
Diaphragm of nitrocellulose .0015".

① Spun dome about 7/8" × .006", regular arm & sapphire, arm wound to dome.

② Arm fastened to diaphragm.

5/1/15.

Made tests with Miss Ingrid.
Selection from "Traviata".
Horn # 6. -54" from floor/57"
from music rack of piano.

35 - Standard - Hold[illegible] - Sharp
Jangles.

50 - Fuller than #35. Fully
as loud. Brings out the
bass notes better.

#51 - More sensative than 50 -
Louder - Sharper - Blasty.

#52 - Very full. Fine quality
on voice, very natural
blasts on piano attack.

5/5/15

Built over #51 - same except 15/16" x .008" dome on center. Still very full - back in horn & blasts badly on low chords. Built over with heavier diaphragm .0035". Now Reeds fine. Full & natural but a trifle back in horn & not quite as loud as standard. Tested out the following other reeders - #50 & 52.

#50 - as compared with #35 not as loud - fuller - does not stand out quite as well.

#52 - On Voice - finest & fullest of all. On Piano natural but inclined to blast on heavy chords.

Reed seen 5/7/15

#51 – As compared with #35 this reader is not quite as loud – is fuller and more natural. Does not stand out as much. The cut may be improved a little.

5/5/15

Reed seen 5/7/15

#51 – Brass Head – Knife edge pattern. 1¼" diameter – domed top. Diaphragm of acetate cellulose from solution 1 part $C_2H_2Cl_4$ to 2 parts $CHCl_3$. .0035".

① Aluminum dome $\frac{15}{16}$ x .008" on center – regular arm & sapphire.

#53
① Loud as 35 - about the same in sharpness. #53 sounds trifle duller & farther back in horn.

② Trifle more full & stands out better.

5/5/15.

#53 - Brass Head - knife edge design 1¼" diameter - flat top.

Diaphragm of acetate cellulobe from solution 1 part $C_2H_2Cl_4$ 12 parts $CHCl_3$ - .0035".

Made new 6/5/15 L. Barnett

① Aluminum dome 15/16" x .006". regular arm & sapphire.

② Needle dropped a little.

5/6/13

Listened to reeds Tooleport last afternoon.

These tests showed up as follows:

#35- Standard.

#47- Sharper and louder than standard. Shows percussive effect of piano hammers. Sounds cool.

#48 - Fuller than #35. Blots few notes. Fairly loud.

#50 - Triple fuller than #35. Not as loud. Sounds cool.

#51- Fuller and more natural than #35. Back in horn. Ringing on some notes.

#52 - Full & loud. Sensative. Very full & natural in tone but blasts on some of the lower notes.

#53- Sharper than 51 or 52. About same as 35. About

#47

① Sharp - small - pinched medium loud but heads fine.

② Just a trifle louder and fuller than ①.

③ Trifle less loud but smooth out all jingles & other inequalities. Very smooth. Surface fine.

④ Very loud, Trifle sharp & stringy.

⑤ Reduces volume. Still louder than #35. Trifle sharp & stringy

⑥ Louder & fuller than 35, on piano. ~~Not so good~~ on voice, sounds like had a cold.

5/6/15

#47 - Brass head. Knife edge pattern 1" diameter.

Diaphragm of cellulose acetate from solution 1 part $C_2H_2Cl_4$ + 9 parts $CHCl_3$

① Spun aluminum dome 3/4" x .006". Regular arm and sapphire.

② Used $\frac{15}{16}$ x .006" dome same otherwise as above

③ Same as above but with cork cone 3/8" diameter on inside

④ Removed dome from above & mounted arm on small piece of cork

⑤ Put on 3/4" x .006 aluminum dome

⑥ Put 5/8" cork buffer on top.

5/7/15

Built new pianoful #51 with cork cones on both pedes. On test this pianoful is louder than 35 - fuller more natural. Blasts on heavy chords. Romance, Nell hold for further tests -
Tested it also against #50. Is louder and does not hold quite as well.

Quartelle came in afternoon - new baritone doing well. Made 8 Rigoletto records, 4 of which kept. Made 2 "On the Time to Relax" records. These last were not so good in balance and effect.

Used recorder #35 on one of these, not good too sharp and did not hold. #74 used. Used also 4 way tube & 4 horns.

#51 —
(1) — Louder than #35.
Fuller than #35.
Natural quality but
blasts a little on heavy
low chords.
Stands out better than #35

Mabeau 5/8/15

5/7/15

#51 - Brass head, 1¼" diameter, knife edge pattern, head domed.

Diaphragm of cellulose acetate .002" - from solution 1 part $C_2H_2Cl_4$ + 9 parts $CHCl_3$.

(1) Cork cone on inside 9/16" diameter x 1/8" high. Cork cone on outside 3/4" diameter x 1/16" high. Regular sapphire & arm.

Mabeau 5/8/15

5/8/15

Made recorder #50 over using cork cones on inside and on outside. Tested out against #74, held as well. About as loud but sounded more muffled and back in horn.

On loud test - held about as well as #74.

Made over domed head #51 - with 5/8" x 1/8" cork cone inside and 1" x 1/16" cork cone outside both turned thin and light.

This recorder showed up very loud and full on Saturday afternoon and held practically as well as #74. On further test Monday morning was a little more dull and did not hold as well, proving that it had stretched somewhat.

#50 –
① Compared with #74.

As loud and full as #74 – looks as usual but sounds little muffled and back in horn.

5/8/15 –
#50 – Brass head – knife edge pattern 1¼" diameter.

Diaphragm of acetate cellulose .002" diameter – from solution 1 part $C_2H_2Cl_4$ + 3 parts $CHCl_3$.

Cork cone on inside – 1/4" diameter × 1/8" high – cork cone on outside 1" diam. × 7/16" high. Regular arm & needle.

Made seen 5/10/15

#57

① - Louder & Fuller than #74 but inclined to fringe. Was then tightened up more & held as well as #74. Decided to hold over to Monday morning and see if it held. Apparently louder & fuller than #74 & holds as well.

Made seen 5/10/15

5/8/15 -

#57 -

Brass head - domed top - 1/4" diameter, knife edge pattern.

Diaphragm .002" - acetate cellulose from solution 1 part $C_2H_6Cl_2$

① Cork cones - 5/8" x 1/8" inside 1" x 1/16" outside. Both turned thin. Regular sapphire and arm.

5/10/15.

Tested out recorder #51 against #74 after leaving it out from Saturday to see if it warped stretch. It was fuller and did not hold as much as on Saturday and must therefore have stretched somewhat.

Note up report.

Made up cork cones for recorders.

Tested out #36 as previously made ($1\frac{1}{2}$"). Triple sharp & rather like in tone.

Replaced aluminum dose with cork cone.

Recorder becomes fuller, same loudness & quality of standing out and but fails to respond to the notes of higher register.

Recorder #50 was tried - first as it stood - Very sensitive & full. Would not stand loud sounds as well as #74. Was then tightened up. Some of the very flue quality was removed and the recorder stood more

Tran #74.

C113

#7H - Standard.
#48 - Full - more muffled & rattly than 7H - not quite as loud and does not stand out as well.
#44 - Loud as #7H - practically as full - holds fine.
#51 - Loud as #7H - little sharp and does not hold as well. Shows fringes.

#2

#7H - Standard.
#50 - Not quite as loud as 7H. Shows hammer blows of piano. Plugsy.
#54 - Very sharp - Loud - Unpleasant
#36 - Loud - little sharp. Holds fine even better than #7H.

5/11/15.

Built one #44 - Burned one diaphragm by pinature. A second snapped when tightening up. This gave me an idea that the head so do it soften the diaphragm material. This gives also much lighter stretching.

#44 held fine but was not loud enough and had a bad rattling quality.

Diaphragm cracked from strain. Built one with celluloid nitrate diaphragm. Tight stretched by heating. Was too sharp & thin.

#54 (new one with high domed head). Built up with ink cones inside and out. Diaphragm tightly stretched. So too sharp & thin.

Tested out with piano the following recorders with results on opposite page -
#7H - #48 - #44 - #51 - #50 - #54 - #36

#HH –

① Sounds fine but is not loud enough, somewhat sharp and rattles on piano notes.

5/11/15

#HH – Brass head 1¼" diameter, knife edge pattern.

Diaphragm of acetate celluloid .002" from solution 1 part $C_2H_2Cl_4$ + 9 parts $CHCl_3$

① Aluminum dome spun 15/16" × .008". Steel arm without foot, regular .038" × .125" sapphire. (Stretched tight)

Diaphragm cracked through aurotrain
Reset gun

#44

① First trial with Miss Imgrund at piano. Thin & sharp but hard music. Fairly loud.

5/13/15

All tests on this date show fine, thin reader full, loud, holds well & plays easy.

5/11/15

#44 -

Brass head. 1¼" diameter. Knife edge pattern.

Diaphragm of nitro cellulose & camphor (Piermans old stock) .002". Stretched very tight.

① Cork cone on outside - 5/8" diameter x 1/8" thick. Steel arm. Fro foot. Regular .038 & .125 sapphire.

#54

① On first trial with Mgo Ground was sharp & thin – fairly loud & seemed to stand out & hold well.

Melbourne 5/12/15

5/12/15 – ② Compared with #74 & #35. Sharper than #74 – about same quality as #35. Not quite as loud as either. Stacks better than either.

5/11/15.

#54 –

Brass Head, 1¼" diameter, knife edge pattern. Domed head. Diaphragm of acetate cellulose from solution 1 part $C_2H_2Cl_4$ + 3 parts $CHCl_3$ – .002" thick.

Made order 5/12/15

① Inside cork cone 5/8" × 1/8". Outside cork cone 1" × 1/16". Regular arm .038" × .125" sapphire.

5/12/15

② New diaphragm same as above. Inside cork cone only 3/4" × 1/16". Regular arm & sapphire

C1193

#54- Not quite as loud as 74 or 35. Holds better than either. Sharper than 74- about same in quality as 35. Excellent holding qualities.

Second Trial. Sound as #74. Little sharper & holds better.

Made over 5/15/15

5/12/15.

Made #54 over. Only change was use of cork cone 3/4" x 1/16" on inside only. Record See opposite.

Made #51 over. Same as before but used aluminum cones 3/4" x 1/16" inside and out, screwed together, no wax being used.

This recorder gave ~~some~~ most curious results.
When first made ~~it~~ sounded was very full - tubby & low but fine quality & holding.
Afterwards ~~it~~ did not hold so well.
On last trial ~~test~~ had become as loud as #74- reed fine, and was a trifle sharper.

5/12/15

① First trial piano. #51 not nearly as loud as #74 - much fuller - back in horn - more natural. Holds fine. Second trial. Did not hold so well.

5/12/15

#51 -

Brass Head - Domed top. knife edge pattern - 1¼" diameter.

Diaphragm .002" acetate cellulose from solution 1 part $C_2H_4Cl_2$ + 2 parts $CHCl_3$

Built-Dec 5/7/15

① Aluminum cones 9/16" x 1/16", inside and outside, screwed together - no wax used to fasten to diaphragm. Reed arm waxed to screw head) and .038"x.125" sapphire.

C123J

5/13/14.

Went over chronograph with Taylor & laid out magneto.

Made over #51 – cutting off all superfluous metal on screw and tightening up diaphragm to the limit.
This reading is very full, low mellow & sweet but blatts on low chords. Blast is caused by jump-outs.

5/13/15

(1) - Sounds much but sharper than #74. Stands out well and as loud.

(2) Became much weaker & much more full back in horn.

(3) Became little louder & looks less full.

(4) Became little louder, stands out better & little less full.

(5) Still louder, stands out better - still a trifle more full than #74.

(6) Became little more sharp than #74

(7) Tests out very good. Trifle louder & fuller than #74. Not quite as loud as #44.

5/13/15

#55 Brass Head - 1½" diameter knife edge pattern.

Diaphragm of cellulose nitrate, .00150" thick

5/14/15

(1) Cork Cone 7/8" x 1/8" on inside. Regular arm x.038"x.125" sapphire.

(2) Put under this a brass disc 3/4" x .014" to add weight.

(3) Reduced above disc to 5/8".

(4) Reduced disc to 1/2".

(5) Used 1/2" x .012" aluminum disc in place of the brass.

(6) Used aluminum disc 1/2" x .008" & tightened up.

(7) Back to 1/2" x .002" aluminum disc

5/14/15.

Marked on recorder #55 - finding it too sharp, added weight in shape of disc on the center and this made it sweeter & more full.

Gradually cutting down this weight made it gradually louder & sharper. Rough never as sharp as #74.

Quartette came. Made 2 all records of Miss Reuser. Solo record of Appegate singing "Evening and Morning". Compared Records 74-44-54 & 55 on this. #54 & 55 were too full & weak. #44 was a trifle fuller than #74 & better. Made most satisfactory quartette records we have yet made. Balance & time (keeping together) good. Expression showed a marked improvement.

6/15/15

Further tests on #55-44-74

~~35.~~

#55 finally full, loud as 74 & better on piano. Not as clean & crisp on voice - stands out well.

#44 - louder than 74 or 44 - stands out better. Quite fuller than 74 - excellent on voice reads as Appegate & Miss Renzen.

Made up #54 hours

5/7/15 - ① Good and firm. About as loud as #74 - fuller.. Will try & made louder to compare with #4055.

Made over 5/22/15

② On test with player piano as loud as 74 but bright sharper.

③ Tails out slightly.

5/15/15

#54 - Brass Head - 1¼" diameter. Knife edge pattern.

Diaphragm of nitrocellulose + camphor, .002".

① Cork disc 3/4" x 1/8" (fairly heavy) on inside.

5/17/15

② New Diaphragm .002" same material as above, new cork disc 7/8" x 1/8". - Regular arm & sapphire.

Made over 5/22/15

③ Put ½" x .008" aluminum disc under foot to add slight weight.

C133J

Also tested out
#51 - fine - full loud natural
#54 - loud but sharp. Nice tone.

#53 - Not as loud as 51-44 or
55 - Holds well, is a little
sharper than 55-51 or 44.

Tightened up #55 - Becomes
sharper & develops whistle
& does not stand out as well
as #74.

5/17/14.
Saw about getting disc machine
for Demonstrating Voice Experiment.

Brief Report.

Made over #51 & 54 recorders
On first test #54 (as made up Sat.)
was as loud as #74 and held
as well and was about as
loud. It was not as loud as #55
#44 however. Made over to make
louder.

Tested
#51 - Stands out fine. Good & loud
Voice natural. Piano much
better than #74 - more natural.

#74 Standard - sounds sharp in
comparison.

#44 - Little more brilliant than 51
& tiny sharper.

#55 - Very big & full - loud - piano
good - So full is not quite natural
on voice.

① Hands out well. Good and loud. Voice natural. Piano more natural than #74.

5/17/15.

#57 Brass Head - Domed top - Knife edge design - 1/4" diameter.

Diaphragm of celluloid nitrate & camphor (old stock) .0015".

① Cork cone 7/8" x 1/8" on inside. Regular arm with foot & sapphire.

5/18/15.

Rigged up player piano in Hayes room and tried out. Works O.K. but does not sound as well as hand playing.

Testing with player piano.

#74 – Standard
#44 – Louder than #74 & fuller but rattles
#54 – about as loud as #74 but sharper.
#51 – Louder than #74 – Fuller & holds well.
#48 – Not quite as loud as #74 but full & good quality.
#55 – Whistles so badly it can not be used.

Sent word to Newyork to inspect Kinetophone apparatus for talking pictures for Dr Bell.

C1393

5/19/15

To Kinetoscope Dept to get reels & records for exhibit to Dr Bell. These are now kept in the Gas House and are in bad shape. Many of those stored on 3d floor of the Studio do not seem to be in the gas house. Most of the reels & records in gas house are in bad shape.

Made aural 2 and 1 minute quartette records. One of the 2 minute records good. Quartette worked well but no better than last week.

Tried out Miss Yates on Aria from Samson & Dalilah on aural records with following results:

#7H - Standard
#4H - Fuller, louder & more sensitive - open free
#5H - little fuller than #7H. About as loud & sensitive.

#57 - Loud as #74 - Clean - firm. Holds well - about same fullness.

Played all the above over for Mr Hayes without letting him know which recorders they were. His comments as follows

A - Thin & metallic (74)
B - Full - stands out of horn solid. Loud (44)
C - Quality about same as (B) but little weaker (51)
D - Fuller than A but not so good as B & C, back in horn (54)

5/20/15.

Tested out recorders & records made yesterday. One of the "Quartette from Rigoletto" records is good.

Tried experiment of adding short stiff spring and lead weight to one of the regular recorders made up.

Effect was surprising. The spring made the recorder much louder & fuller.

Tried out same on #54 recorder, using longer spring of .011" piano wire. Effect same but not so pronounced.

Tried out same on recorder #57 - first with heavy weight. Apparently weakened recorder a little. Then used lighter weight. Slightly better results. Then lighter weight with apparently still better results but recorder weaker here.

Charles John Hutton on personal equation attachments for Disa Machine.

5/21/15.

Tested out spring and weight device on #57 recorder.
This recorder was normally good. The spring & weight simply made it weak. Had some difficulty restoring #57 to normal condition.
Tried out this spring and weight on recorder #47 (1" diaphragm). Made it apparently louder & fuller.
Ran "Quartette from Rigoletto" for Mr. Edison. He said it was good in proportion & balance but a little weak.
Made #47 recorder ready to try out spring experiment.
Tried up much several weights & springs. The lighter of these seemed to make the recorder a little louder and fuller.
Tried also spring fastened to side and pressing recorder diaphragm toward wax. Clean record but not remarkable.

5/21/15

(1) Loud - sharp - whistles
(2) Louder - not so sharp - still whistles
(3) Not as loud as (1). About as sharp as (2)
(4) About as loud and sharp as (1). Throttle has slapped.

5/21/15

#47 Brass Head - Knife edge pattern 1" diameter.
Diaphragm of acetyl cellulose .0015" thick from solution 1 part $C_2H_2Cl_2$ + 9 parts $CHCl_3$.
(1) Regular arm x .038"x.125" sapphire.
(2) Light weight x spring added
(3) Heavier " " "
(4) Spring fastened to side of head.

5/22/15.

Mounted #47 recorder up with needle supported by wire from front in place of rear arm as usual for surface test.

Does not vibrate as expected and apparently gives very little surface. Will continue this.

Tester cut good recorders, to see if warm, damp afternoon changed them with following results —

#74 - Standard. Holds & stands out well.

#44 - Louder than #74 - Stands out fine & holds. trifle more fuzz.

#57 - Slightly louder than #74 - blasts jumps out

#57 - TIGHTENED - about as loud & little louder than #74. Fuller holds.

#55 - About as loud as 74. does not stand out as well - Fuller

#54 - Louder than #55 - Fuller than #74 and fully as loud.

#74 - Standard.
+ #51 - Louder than #74 - Fuller. Holds about as well.
#50 - About as loud as #74 - ~~About~~ as sharp but has not as good definition
#74 - Standard.
#55 - About as loud as #74 - Much fuller - Does not hold as well.
+ #54 - not quite as loud as #74 - fuller. Holds better.
#74 - Standard
#48 - Loud - Does not hold as well - Fuller than #74 and trifle louder.
+ #44 - As loud as 74 & fuller & more natural. Holds better Piano full - good natural

5/24/15

Wrote up report.
Made up #54 reeder with aluminum disc over cork cone to get Edison effect.
This turned out pretty well.
Added light lead weight and spring
Made it a little louder & fuller.
Added heavier weight.
Became still more loud & full.
~~Tested out~~ reeder on opposite page.

(1) About as loud as #74. Reeds well - voice sounds a little sharp & whistly. Lute more muffled than #74 - not as clear & clean

(2) Voice sounds better than above. Piano a little more clear. The difference however is not great. A very close match for #74 in loudness and quality. Stands out as well or better than #74 and Reeds a little better.

(3) Becomes noticeably fuller and little louder than (2). Pretty good quality.

5/24/15.

#54 - Brass head - domed out - 1¼" diameter - knife edge design.

Diaphragm of cellulose nitrate (old film stock) dissolved in 3 parts of amyl acetate + 1 part acetone.

(1) Cork Cone 1" x ⅛" with aluminum disc 1" x .004" on inside. Regular arm and sapphire

(2) Added light weight & spring to above.

(3) Put heavier weight and spring in place of above.

#7H - Standard.

#85. My. Recording Dept. Standard Trifle sharper than #7H - stands out trifle better - clear - clean -

#HH - Much louder & fuller than Standard. Stands out much better. More sensative & inclined to blast.

#51 - Louder & more sensative than standard - Fuller - Stands out well.

#5H - Not as loud as #51 & #HH but good - full and natural - holds well. Picked up piano very well.

#55 - Good and full - natural slightly sensative & inclined to flinge.

5/25/15

Made up recorder #55 as next page.

First trial weak & sharp. Took down and added spring & weight. Makes it a little fuller but still sharp. On examination found that cork moved touch on slight motion showing very little play. Made up new diaphragm & cone with thinner cork.

Record still thin & sharp not loud enough but louder than before. Added spring and weight which makes it fuller but not as loud as #7H.

Made further tests of recorders Miss Dougrud's voice) as per opposite page.

Tried supporting needle arm from front with steel wire .011 & linen thread. In both cases record had great deal of surface was sharp & unpleasant.

Added 7/8" x .006" aluminum disc to make quiter. Record still shows surface and is sharp.

(159)

5/25/15.

① Very low (not loud) sharp

② Trifle more full.

③ Little louder - still sharp

④ Little more full - About as full but not as loud as #74.

5/25/15

#55 - Brass head - domed top - 1¼" diameter - knife edge pattern.

① Diaphragm of nitro cellulose (film stock) - .005" from solution 3 parts amyl acetate, 1 part acetone. Cork cone 1" x 1/8" (fairly heavy) and aluminum disc 1" x .004, ~~Neck~~ on inside. Regular arm & sapphire.

② Added spring & weight.

③ Changed diaphragm & cone & disc - same as above except cone lighter & thinner.

④ Added spring and weight.

5/26/15.

Had recording machine cleaned and new heat put on.

See about taking picture in Library for Mr. Edison and get machine ready for show on 8th at Studio

Got 4 heads from Taylor & began on #56.

Records of Quartette.

Surprising results. #44 & #51 recorders fine on solo and on piano records. Went all to pieces on Quartette. Showed interference & noise. #74 recorder made Quartette beautifully.

Put 4 minute recording with Werners recorders #6 & #49. #6 muffled & not loud enough. #49 not clear & sensative.

Made Kinetophone type records with #51 Recorder. These were very good and clear.

① Piano Test – Little fuller than #74 – About as loud. Stands out well.
Voice Test – Fully as loud as #74 – Stands out as well – Reeds better –

5/27/14.

#56 – Brass Head – Knife edge pattern – 1¼" diameter. domed.

Diaphragm of cellulose acetate from solution 2 parts $CHCl_3$ + 1 part $C_2H_2Cl_4$. – .0025".

① Cork cone 1"×1/8" on inside Regular arm & capphire.

C1653

5/27/15.

Got ready for violin deception experiment. Hayes got Mr. Johnson from Metzel's department as violinist.
This test developed that deception was possible - as a number that looked in the door were deceived.
The following improvements were suggested =

① That actual piano be used to accompany to divide the attention of the audience and to cover the surface

② Piano and violinist be provided with music of the selection that the fingering as well as the tempo and expression be kept.

③ The chances for deception are increased by distance of audience because they can not follow so accurately, can not hear surface, clicks and start of reed and

because the sound is more natural in loudness because the phonograph carries farther, fills at distance.

(A) Bow should be glycerined rather than soaped to secure silence on strings.

Piano Test

Made ann 6/2/15

① Weaker than #74 or #56
Does not stand out as much -
- Not commercial

Voice Test

Rotten surface - Weak - Back
in horn - N.G.

5/28/15.

#57 - Brass Head - domed top -
knife edge pattern - 1/4" diam.

Made ann 6/2/15.

Diaphragm of cellulose
acetate from solution of parts
$CHCl_3$ + 1 part $C_2H_2Cl_4$
-.003"

① Cork cone on inside
1" x 1/8". Regular arm
and sapphire.

(1) about as loud as piano test #74.
Little sharper. Needs mus.

Not as loud as #74 - clearer test
more distinct & needs mus
's fair.

Sent to Mr Merrin
5/29/15 as it is
quality he wants

5/28/15 -
#58 - Brass Head - Domed top.
Knife edge pattern - 1/4".

Diaphragm of cellulose
acetate from solution 3 parts
$CHCl_3$ #1 part $C_2H_2Cl_4$
-003".

(1) Cork Cone on inside
1" x 1/8". Regular arm and
sapphire.

Sent to Mr Merrin
5/29/15 as it is quality
he wants.

C173J

#44 - Big full, natural - loud
mellow & rattle just a
little

#74 - Standard

#57 - Big - fuller than #74 -
holds pretty well.

54 - Fuller than #74 - about
as loud - little further
back in horn.

Cylinder #2

#74 - Standard

56 - Little fuller than 74 -
about as loud - Stands
out as well.

x # 57 - Weaker than 74 or 56
does not stand out
as well - Not Commended

#58 - About as loud as #74
Little sharper. Holds
fine.

5/28/15 -
Made up recordings 57 and
58.

Tested the following recordings
with upright piano -
2 - #7 horns - 32" from piano
46" from floor - with results
on opposite page.

Voice trials with same on
next page.

Tried piano recording
(A) Upright piano - 2 horns 1/2"
from strings
(B) Grand Piano - 2 horns about
36" from center of strings
(C) Grand Piano - 1 horn same
as before.

Of these A was loudest - good
(B) was softest - excellent recording
(C) was louder than B and
mawery - not as good.
2 horns seems to improve
piano recording.

74 Standard - Blasts slightly.
54 - not as loud. More clear & distinct & holds well. 55 fair, - not as clear.
57 - Rotten Surface - Weak Back in horn - N.G.
✓ # 56 - Fully as loud as 74 stands out as well - holds better than #74 -
54 - Not as loud as 74 - holds pretty well
#51 - Louder than any of the above - stands out well holds about as well as 74 -

May 22 -

5/29/15 -

Arranged to shape cork cones on diaphragms more accurately and made several of these!

Arranged with Taylor about pencil point arrangement on the chronograph.

Tore down reader # 57 & attempted to bend over. Cracked Diaphragm.

Met Mrs. R. Wilbourn & Miss Willette Wilbourn, #3607 Chestnut St, Philadelphia, Pa. Mrs W. Contralto Miss W. Soprano & pianist. Mr. E. engaged for experimental recording.

5/31/15
Decoration Day.

#74 - Standard.

#44 - Louder, fuller & more natural than #74.

#57 - Louder, fuller & more natural than #74 - not quite as good definition as #44

#54 - Not as loud as 44 or 57. Fuller & more natural than #74.

6/1/15.

Worked on cork cones for readers.
Worked on reader #57.
Made up report.
Got Johnson and & with Miss Dingfield & mine tried out violin delusion experiment for Diamond Disc Demonstrating. Seemed to be successful. Got MR H & Mr. E. to see it.
Tried Miss Dingfield on imitating voice with same. Delusion not good. Could easily locate difference between sound of phono & Miss D.
Tried Violin reading with readers #'s 74, 44, 57, 54. with results opposite.

Made over 6/7/15
See Book #2

1 ① Sharper than #74 - Further back in horn. Cleaner, better definition.

6/2/15.

#57 -

Made over 6/7/15
See Book #3

Brass head - Domed top - 1¼" diam - Knife edge pattern.

Diaphragm of acetyl cellulose from solution 2 parts CH_3Cl_3 part $C_2H_2Cl_4$ - .003". Head heated on shrinking diaphragm otherwise it breaks.

① Cork cone shaped to fit head 1" x ⅛" on inside. Regular sapphire and arm

Made over 6/5/15 See Book 3

(1) Much louder than #74. Fuller. More surface. More sensative. – Has fringes

(1) (b) after tightening. Not as loud and unpleasant in surface as above. Fuller than #74.

6/2/15

#59 Brass Head - Domed Top - 1¼" diameter Knife edge pattern.

Diaphragm of acetyl cellulose from solution 2 parts $CHCl_3$, 1 part $C_2H_5Cl_4$ - .0015".

(1) Cork Cone shaped to fit head 1" x 1/8" on inside. Regular sapphire and arm.

Made over 6/5/15 See Book 3

6/2/15

#60 Brass Head, Domed top - 1½" diam.
Knife edge pattern.

Received 6/5/15 See Box 63

Diaphragm of nitro cellulose from solution amyl acetate .002".

(1) Cork Cone, shaped to fit head 1" x 1/8" - cracked inside. Regular Sapphire and arm.

6/8/15.

Built up recorders 57-59-60.

attended meeting Engineering Committee.

Saw to getting Kinetophone outfit put up in Office Bldg. for show on the 8th.

6/8/15

#61

Brass Head - Domed Top - 1¼" diam.
Knife edge pattern.

Diaphragm of nitro cellulose from solution in amyl acetate .00175"

(1) Cork cone on inside, shaped to fit head. Regular arm and sapphire.

#74 - Standard -
#57 - Sharper - farther back in horn - cleaner - better definition.
#59 (a) Much louder than #74 Fuller - more surface - more sensative - surface unpleasant has fringes.

#74 - Standard
#60 - Louder - fuller - more sensative - less surface than #74 - pleasant tone
#61 Loud as #74 - fuller - holds fine - surface good - pleasing tone.

#59 (b) Not as loud and unpleasant and has not fringes as (a). Triple fuller.

6/3/15 -
Made up recorder #61.
With Taylor testing out chronoscope.
With Lawson getting library made & kinetoscope in shape for Kinetophone show.
Preliminary test of new recorders as per opposite page:
Difference between (a) & (b) in #59 is that diaphragm was tightened more on (b)

Further tests on recorders
#57 - Sharper & further back in horn than #74 - cleaner, better definition.
#59 - Much louder than #74. Fuller. more surface & unpleasant. fringes.
#60 Louder - Fuller - more sensative & less surface than #74
#61 - Loud as #74 - fuller - holds fine. Surface as good -

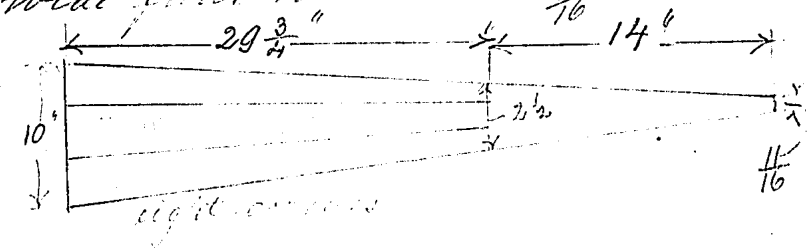
[ITEM(S) FOUND IN BOOK]

aBm
Order for MPA
#1.140,890 - Sugmal Horn
S. Scognamillo - 5/18/15.

[ITEM(S) FOUND IN BOOK]

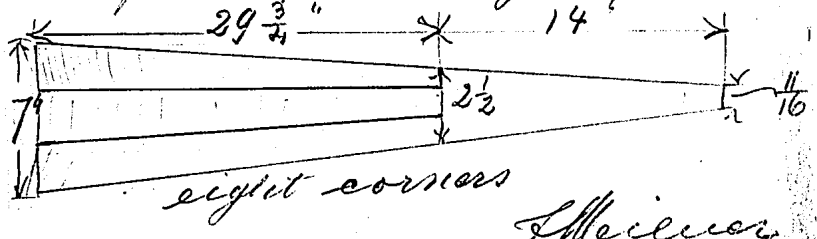
[redacted] horn # 1.

length 43 3/4"
thick .010
wide front 10" ending 11/16"



Recording-Horn. # 2.

length 43 3/4
thick .010"
wide front 7" ending 11/16



F. Meiers

[ITEM(S) FOUND IN BOOK]

Often -

#1 – Diminished volume
Increased fullness

#2 - Diminished volume } but
- Increased fullness }
to less extent than #1.

#3 – Diminished volume } but
Increased fullness
to less extent than #2

#4 - Diminished Volume } but
Increased Fullness }
to less extent than #3 –
very slightly